

IN THE CLAIMS:

Please amend Claim 1 as shown below.

1. (Currently Amended) A device for detecting a target substance in a fluid, comprising:

a periodic structure having a vacant portion for passing a fluid containing the target substance and a solid portion capable of transmitting light as an electromagnetic wave arranged regularly to form a periodic distribution of a refractive index for the electromagnetic wave;

a light projecting means for projecting the light to the periodic structure; and

a ~~detecting means~~ two-division detector for detecting a change in position of an optical path of the light emitted from the periodic structure[.]); and

~~wherein a calculation means for calculating~~ the quantity of the target substance ~~is calculated~~ based on the change in position.

2. (Original) The device according claim 1, wherein a trapping substance capable of bonding selectively to the target substance is disposed on the surface of the solid portion, and a change in the periodic distribution of the refractive index caused by bonding the target substance to the trapping substance is detected.

3. (Original) The device according to claim 1, wherein the periodic structure forbids transmission of the electromagnetic wave in a specific wavelength band

depending on the periodic distribution of the refractive index.

4. (Cancelled)

5. (Previously Presented) The device according to claim 3, wherein the periodic structure has a defect in the regular arrangement of the vacant portion and the solid portion to provide an electromagnetic wave-transmissive wavelength range in the wavelength band where the electromagnetic wave propagation is forbidden, the light projecting means projects the light in the electromagnetic wave-transmissive wavelength range to the periodic structure, and the detecting means measures the light of the electromagnetic wave-transmissive wavelength range emitted from the periodic structure.

6. (Original) The device according to claim 1, wherein the device has additionally a temperature-controlling means for controlling the temperature of the periodic structure.

7. (Original) The device according to claim 1, wherein the device has additionally a polarization-controlling means for controlling polarization of the electromagnetic wave.

8. (Previously Presented) The device according to claim 1, wherein the light projected to the periodic structure has a continuous wavelength component, and the

detecting means measures the spectrum of the light emitted from the periodic structure.

9. (Previously Presented) The device according to claim 1, wherein the light is projected through a collimating means onto the periodic structure.

10. (Previously Presented) The device according to claim 1, wherein the device has additionally a first aligning means for aligning the light emitted from the electromagnetic wave-projecting means to enter the periodic structure at a prescribed position at a prescribed angle, and a second aligning means for aligning the light to reach the detecting means.

11. (Original) The device according to claim 1, wherein the solid portions of the structure are columnar, and the vacant portion is an interstice among the structure.

12. (Original) The device according to claim 1, wherein the solid portion is a continuous body and the vacant portion is constituted of holes penetrating the continuous body.

13 to 31. (Cancelled)

32. (Previously Presented) The device according to claim 1, wherein the

detecting means is a two-division sensor.

33. (Previously Presented) The device according to claim 1, wherein an emission face of the periodic structure is circular.